Enhancing Human Development through Space Education: Attempts by JAXA Space Education Center

Presentation by Space Education Center
Japan Aerospace Exploration Agency (JAXA)

Fiftieth Session of the Committee on the Peaceful Uses of Outer Space
13 June 2007, Vienna
1. Enhance the understanding of the thinking process behind the knowledge
   ➢ Importance of life

2. Increase the appreciation of “Science” and “Technology”
   ➢ Spirit of “Never Give Up”

3. Increase the awareness of the importance of “building a prosperous future” together
   ➢ Acting as a responsible member of the society
Work on Children’s Minds

“SPACE = Unique source of interest, imagination & inspiration.”

Curiosity
Toward mysteries in the universe

Engineering
Techniques needed for space activities

Adventure
Exploring outer space

SPACE: 13.7 billion years from pieces of galaxies and star to our lives on the Earth

Stimulating children’s curiosity toward the nature, universe and life while stressing the importance of life

Human Development with Space at its Core

Space Education Center
EDUCATION SUPPORT: 
Working Closely with School Teachers

✓ Teachers as our main collaborators
✓ Types of support:
  A) Direct, customized support:
    ① Developing teaching and learning materials
    ② Supporting classroom activities
    ③ Sending experts to the classrooms
  B) Disseminate introductory educational materials for use in the regular curriculum
✓ From kindergartens to high schools
Education Support: Examples

“Space Kitchen Kagoshima” Project: Yamashita Elementary School

Making rockets together: Wakayagi Kindergarten

Tripartite video-onference: 3 elementary schools in Uchinoura and Kagoshima
Hands-on Activities: Cosmic College

- To increase interest in science & technology
- To help form groups of young people fond of science and technology
- To guide young people to think and solve questions by themselves
- To encourage collaborations with others
- To lead young people to appreciate the importance of life
Collaborations through existing framework for space cooperation

**Cooperation for the benefit of developing countries**

- **Asia-Pacific Regional Space Agency Forum (APRSAF)**
- **Space Conference of the Americas (C.E.A.)**
- **IAC Student Programme NASA Academy, GENSO Project CanSat Activities**
- **CubeSat, CanSat**
- **JAXA**
- **ISEB**
- **COPUOS UNESCO**
- **ISU Support**
- **Support to OOSA and UNESCO activities**
- **Report to:**

**Collaborations led by space faring nations**
Global Framework for cooperation: International Space Education Board

☆ Current membership: CNES, CSA, ESA, JAXA, NASA
☆ Established in October 2005 to: i) To increase science, technology, engineering and mathematics literacy achievement in connection with space; ii) To support the future workforce needs of space programs
☆ Joint projects:
  i) Student participation programmes: IAC & COSPAR Assembly
  ii) Global Education Network for Satellite Operations
  iii) CanSat activities
  iv) International Participation in NASA Academy
  v) Delta Research School Project
Global Framework for cooperation: working with entities of the United Nations system

- United Nations Office for Outer Space Affairs
- United Nations Educational, Scientific and Cultural Organization (UNESCO)
- Space education activities in multiple cities in Colombia (Nov.-Dec.05), Vietnam (Mar.06) and Ecuador (May 07)
Regional framework for cooperation: Asia-Pacific Regional Space Agency Forum (APRSAF)

★ APRSAF Space Education and Awareness Working Group

☆ Water Rocket Activities

- 1st: Kitakyushu, Japan, Oct.05; 2nd: Jakarta, Indonesia, Dec.06;
  - 3rd (planned): Bangalore, India, Nov.07
- Participating countries: Australia, Cambodia, China, India, Indonesia,
  Japan, Malaysia, Philippines, Republic of Korea, Singapore, Sri Lanka,
  Thailand, Vietnam
- Educator’s Manual and DVD for water rocket activities: network of
  educators and teachers for water rocket activities

☆ Poster Contest

- 1st Contest: Theme “Importance of Space”, Jakarta, Indonesia, Dec.06
- 2nd Contest (plan): Theme “50 Years in Space”, Bangalore, India, Nov.07
Regional framework for cooperation: Asia-Pacific Regional Space Agency Forum (APRSAF)

★ Promoting space education activities through APRSAF Space Education and Awareness Working Group (Continued)

☆ Space Education Forums/Seminars (co-organized with UNESCO)
  ✓ March 2006: Hanoi, Vietnam (for school teachers and students)
  ✓ December 2006: Jakarta, Indonesia (for school teachers)

☆ CanSat Activities (for university students)
  ✓ International CanSat Workshop: February 2007, Tokyo, Japan
    ➢ Recommendation: Organize an APRSAF training seminar for trainers of CanSat activities in Asia and the Pacific (2008?)
Regional framework for cooperation: Outside Asia and the Pacific

★ Through regional mechanisms for space cooperation
☆ Europe: ESA-Japan Annual Meeting
☆ Latin America & the Caribbean: Space Conference of the Americas (CEA)
  → Support hands-on activities, e.g. water rocket activities
  → Assist in linking interested entities in Latin America with Japanese universities (e.g. CanSat and Cubesat development and experiments)

★ Through regional projects of Japanese development agencies
☆ Africa: through a project of Japan International Cooperation Center
  → Introductory session on space education (Sep’06) for science teachers (8 countries: Kenya, Gambia, Ghana, Malawi, Namibia, South Africa, Tanzania and Uganda)
Creating synergies among global and regional initiatives

- **CanSat Activities**
  - Joint activity of ISEB
    - Introduced at APRSAF
    - Introduced at V CEA

- **Water Rocket Activities**
  - Introduced at APRSAF
    - Joint annual event of APRSAF
    - Introduced in Latin America thru. UNESCO Space Camps and V CEA

- **Poster Contest**
  - Regional initiative of APRSAF
    - Contribution to global activity, World Space Week
Approaches to promote space education through collaborations

• **Formal education**
  – **Curriculum**: integrating space-related subjects into the existing curriculum or classroom activities
    → Development and dissemination of education materials
      (e.g. Guidebook on introductory education materials)
  – **National pilot projects**: integrating space education activities or programs at selected schools as pilot projects
    → Need strong support from the ministries responsible for education
      (e.g. Super Science High-schools; Science Partnership Programs)

• **Informal education**
  – **On-site, hands-on activities**: organizing events after school hours or over the weekends
    → Development of programmes, teaching methods and education materials
    → Importance of responding to interests of local communities:
      Local communities should take initiatives!
    → Focus on training trainers and instructors for hands-on space activities
  – **Home activities**: supporting supplementary activities at home
    → Development of programmes and materials for use at home

More effective to pursue both approaches at the same time!
Space Education Efforts of JAXA for Human Development

- Human development: at the societal level and the individual level
  - Balancing the focus of efforts between the prosperity of the society and the enrichment of individual human beings

- Establishing a network of space education efforts
  - Coalition of forces to use space materials to assist young people to lead lives that are full of happiness and joy of living
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